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| 10/549,645 | 09/20/2005 | Arnd Ritz | DE030093US1 | 8073 |

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| EXAMINER | |
|---|---|
| SNYDER, ZACHARY J | |
| ART UNIT | PAPER NUMBER |
| 2889 | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/549,645 | RITZ, ARND | |
| | Examiner | Art Unit | |
| | Zachary Snyder | 2889 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *24 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 October 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

Receipt is acknowledged of applicant's amendment filed 10/24/2008. Claims 1-24 are pending and an action on the merits is as follows.

### *Response to Arguments*

Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-24 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,610,469 to Bergman et al. in view of U.S. Patent 5,680,001 to Mulder et al.

In regard to claim 1, Bergman discloses in figure 2, a lamp comprising a lamp bulb (16, figure 2),

on the surface of which at least one interference filter (50) is at least partially located, wherein

at least this interference filter (50) comprises several layers, wherein the layer structure comprises alternating layers with a higher refractive index and layers with a lower refractive index (coating 50 is preferably an optical interference filter made of alternating layers of refractory metal oxides having high and low indexes of refraction, COL. 5, LINES 7-9).

Bergman does not disclose the thickness of these alternating layers.

Mulder teaches an interference layer wherein:

the structure of the interference layer (5) comprises alternating layers wherein (interference filter 5 comprises alternating layers 51 and 52, COL. 3, LINE 5-7),

at least the outer layer and/or at least one inner layer of the interference filter comprises a protective layer (layer 53) to reduce thermal and/or intrinsic stresses (adhesion layer 53 that improves adhesion and durability of the interference film, COL. 1, LINE 67, by reducing stress in the film, COL. 1, LINE 55-56), and wherein

the thickness of the protective layer (thickness of 50 nm, shown in the tables in COL. 3 and 4) or protective layers has a value below 40% of the value of all other layers with the lower refractive index (total layer thickness is 2053.1 nm so the protective layer is 2% of the total thickness).

In regard to claims 2, 3, and 11, Bergman in view of Mulder teaches the limitations of claim 1, wherein Mulder also teaches that the protective layer, lower refractive index layer, and lamp bulb have comparable indices of thermal expansion, and have the same chemical compositions, and mainly comprise $SiO_2$ (shown in the tables in COL. 3 and 4).

In regard to claim 4, Bergman in view of Mulder teaches the limitations of claim 1, wherein that the second layer, the high refractive index layer, is made material comprising tantalum oxide (shown in the tables in COL. 3 and 4).

In regard to claim 5, Bergman in view of Mulder teaches the limitations of claim 1. It would be obvious to one of ordinary skill in the art at the time of the invention that the teachings of Bergman and Mulder would be applicable to any electric lamp such as a high intensity discharge lamp.

In regard to claim 6, Bergman in view of Mulder teaches the limitations of claim 1. Mulder teaches that the protective layer is arranged within the interference filter (shown in the tables in COL. 3 and 4 to be a part of interference filter).

In regard to claim 7, Bergman in view of Mulder teaches the limitations of claim 1. It would be obvious to one of ordinary skill in the art at the time of the invention that the teachings of Bergman and Mulder would be applicable to an illumination unit using the lamp taught by Bergman and Mulder.

In regard to claim 8, Bergman in view of Mulder teaches the limitations of claim 3. Mulder teaches that the second layer of the interference filter comprises a material a higher refractive index than $SiO_2$ (interference filter 5 comprises alternating layers silicon oxide 51 and higher refractive index material 52, COL. 3, LINE 5-7).

In regard to claims 9 and 10, Bergman in view of Mulder teaches the limitations of claim 8, and Mulder also teaches that the higher refractive layer is made of $ZrO_2$ (COL. 1, LINE 23).

In regard to claim 12, Bergman discloses in figure 2 a lamp comprising

a lamp bulb (16, figure 2);

an interference filter (50) disposed on a surface of the lamp bulb, the interference filter comprising:

a) a first plurality of layers having a first index of refraction and made of a first material (coating 50 is preferably an optical interference filter made of alternating layers of refractory metal oxides having high and low indexes of refraction, COL. 5, LINES 7-9); and

b) a second plurality of layers having a second index of refraction and made of a second material, the second index of refraction being higher than the first index of refraction, the second plurality of layers alternating with the first plurality of layers (coating 50 is preferably an optical interference filter made of alternating layers of refractory metal oxides having high and low indexes of refraction, COL. 5, LINES 7-9).

Bergman does not disclose the order of the layers or the use of a protective layer.

Mulder teaches an interference layer wherein:

the structure of the interference layer (5) comprises alternating layers wherein (interference filter 5 comprises alternating layers 51 and 52, COL. 3, LINE 5-7),

such that the filter begins at the lamp bulb with one of the second plurality of layers and ends with one of the first plurality of layers (shown in the tables in COL. 3 and 4), and also comprising

at least one protective layer made of the first material (adhesion layer 53 that improves adhesion and durability of the interference film, COL. 1, LINE 67, by reducing stress in the film, COL. 1, LINE 55-56), the protective layer having a thickness that is no more than 40% of the total thickness of the first plurality of layers (total layer thickness is 2053.1 nm so the protective layer, thickness of 50 nm, is 2% of the total thickness).

In regard to claims 13 and 14, Bergman in view of Mulder teaches the limitations of claim 12. Mulder also teaches that the second material comprises zirconia ($ZrO_2$ COL. 1, LINE 23) and that the first layer comprises silica ($SiO_2$, COL. Table of COL. 3 and 4) and it would be obvious to one of ordinary skill in the art at the time of the invention that the teachings of Bergman and Mulder would be applicable to any electric lamp such as a high intensity discharge lamp.

In regard to claim 15, Bergman in view of Mulder teaches the limitations of claim 12. Mulder also teaches that the outer layer of the interference filter is the protective layer (shown in the table in COL. 3 and 4).

In regard to claims 16 and 17, Bergman in view of Mulder teaches the limitations of claim 12 and Mulder teaches that the protective layer comprises at least one of the first plurality

of layers intermediate between the bulb and an outside of the interference filter (first plurality of layer comprises SiO2 just as the protective layer 53 does, layer 53 can be viewed as two layers 25 nm thick next to one another and between the surface of the bulb and outside of the interference filter).

In regard to claim 18, Bergman in view of Mulder teaches the limitations of claim 12. Mulder also teaches that the lamp is quartz glass (COL. 2, LINE 66).

In regard to claim 19, Bergman in view of Mulder teaches the limitations of claim 1. Mulder teaches that the film protects from stress caused by temperature fluctuations (COL. 1, LINES 26-32).

In regard to claim 20, Bergman in view of Mulder teaches the limitations of claim 1. It would be obvious to one of ordinary skill in the art at the time of the invention that the teachings of Bergman and Mulder would be applicable to a lamp that is a halogen lamp.

In regard to claim 21, Bergman in view of Mulder teaches the limitations of claim 12. Mulder also teaches that the interference filter has a total thickness of 3.6 micrometers.

In regard to claim 22, Bergman in view of Mulder teaches the limitations of claim 12. Mulder also teaches that the first material comprises silica (shown in the table in COL. 3 and 4), the second material comprises zirconia (COL. 1, LINE 23), and the thickness of the protective

layer is chosen so not to change the effect of the interference filter but still provide protection (COL. 1, LINES 45-52).

In regard to claims 23 and 24, Bergman in view of Mulder teaches the limitations of claims 12 and 1 respectively. They do not teach that the layers have a thickness in a range of 32%-40% of a total thickness of the first layers. However Mulder does not teach away from forming a thicker protection layer than the one example provided. Mulder simply demonstrates that the layer can be relatively thin and still be effective. There is no reason to believe that the layer could not be thicker. The Examiner contends that it would have been an obvious matter of design choice to form a thicker protection layer, since Applicant has not adequately disclosed any specific advantage the invention benefits from over the prior art from this modification. It appears that Mulder's protection layer would perform equally well for reducing stress in the interference filter.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary Snyder whose telephone number is (571)270-5291. The examiner can normally be reached on Monday through Thursday, 7:30AM to 6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Toan Ton can be reached on (571)272-2303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Zachary Snyder/
Examiner, Art Unit 2889

/Karabi Guharay/
Primary Examiner, Art Unit 2889